

## AN EMPIRICAL STUDY OF SLR IMPACT ON INDIAN ECONOMY

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### **ABSTRACT:-**

Most of the countries which are developing are facing various challenges in the economic growth. At this point of time India is having the biggest challenge in managing the fiscal deficit. This paper has focused on SLR influence is there on fiscal deficit during the 20 years span. Bivariate correlation had proven that the monetary policy key rates are having moderate relationship with the budget allocation & fiscal deficit. IIP (index of industrial production)-industrial growth index is depending on interest rates in India & liquidity also playing crucial role in budget allocation every year. This paper is useful for the research scholars, economists, bankers & various government institutions.

**KEY WORDS:-**Budget, Fiscal deficit, GDP (gross domestic product), IIP (Index of industrial production), Inflation, Liquidity, Monetary policy, SLR (statutory liquidity ratio).

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### **INTRODUCTION:-**

Statutory Liquidity Ratio (SLR) refers to the amount that the commercial banks require to maintain in the form of cash, or gold or government approved securities before providing credit to the customers. Statutory Liquidity Ratio is determined and maintained by the Reserve Bank of India in order to control the expansion of bank credit. It is determined as the percentage of total demand and percentage of time liabilities. The maximum limit of SLR is 40% and minimum limit of SLR is 24%. In India, Reserve Bank of India always determines the percentage of Statutory Liquidity Ratio. There are some statutory requirements for temporarily placing the money in Government Bonds. Following this requirement, Reserve Bank of India fixes the level of Statutory Liquidity Ratio. At present, the minimum limit of Statutory Liquidity Ratio that can be set by the Reserve Bank is 25%. If any Indian Bank fails to maintain the required level of Statutory Liquidity Ratio, then it becomes liable to pay penalty to Reserve Bank of India. The defaulter bank pays penal interest at the rate of 3% per annum above the bank rate, on the shortfall amount for that particular day. The RBI can increase the SLR to contain inflation, suck liquidity in the market, to tighten the measure to safeguard the customer money. The Statutory Liquidity Ratio is the term most commonly used in India. The SLR is commonly used to contain inflation and fuel growth, by increasing or decreasing it respectively. This counter acts by decreasing or

increasing the money supply in the system respectively. Indian Bank holdings of government securities are now close to the statutory minimum that banks are required to hold to comply with existing regulation. When measured in rupees, such holdings decreased for the first time in a little less than 40 years (since the nationalization of banks in 1969) in 2005-06. While the recent credit boom is a key driver of the decline in bank's portfolio of government securities, other factors have played an important role recently. These include:

1. Interest rate increases
2. Changes in the prudential regulation of bank's investment in government securities

Most government securities held by banks are long-term fixed rate bonds, which are sensitive to changes in interest rates. Recently a huge demand in government securities was seen by almost all the banks when RBI released around 108000 crore rupees in the financial system. This was by reducing CRR, SLR and repo rates. This was to increase lending by the banks to the corporate and resolve liquidity crises providing economy with the much needed fuel of liquidity to maintain the pace of growth rate.

#### **OBJECTIVES:-**

- To find the relationship of monetary policy key rates with inflation.
- To find the budget allocation impact on SLR.
- To find the relation between interest rates and IIP and predict its future movement with the help of repo rate.
- SLR impact on nifty volatility and its influence on GDP and fiscal deficit

#### **SCOPE:-**

This paper has been emphasized on statutory liquidity ratio (SLR) effect on fiscal deficit of India. For this analysis, data has been considered from 1994 to 2014 i.e., 20 years. Monetary policy will have the impact on liquidity and general economy. RBI governor always enunciate his interest rates keeping in view of various economic factors like inflation, GDP, fiscal deficit and other variables. This analysis intension to find the SLR impact on fiscal deficit which is getting wider year on year. This deficit is acting as hurdle for country's growth.

#### **NEED OF THE STUDY:-**

The need to study SLR is to contain inflation, fuel growth and suck liquidity in the market and to tighten the measure to safeguard the customer money. Every year the Reserve Bank of India changes SLR, CRR, & Repo Rate to control the supply of the money in the country. The monetary policy key rates match the demand and supply of the currency and these are implemented through instruments like SLR, CRR, Repo rate and Reverse Repo rate these are also used in checking the level of inflation. This study also makes an attempt to do critical in-depth reviews of the fiscal responsibility & budget management act and also tries to predict optimal condition of the factors that responsible for affecting Nifty.

#### **REVIEW OF LITERATURE:-**

1. **M Nagendra & M Haritha:** The NSE NIFTY Index tracks the behaviour of a portfolio of blue chip companies, the largest and most liquid

Indian securities. The Index is well studied for benchmarking, index funds and index based derivatives. The persuading power of NSE Nifty is very high on other indices especially NSE sectorial indices. Performance of the economy influences industry sector returns differently and changes over time periods. Thus, changing pattern of correlations between sectors is vital for investment purpose. The present study approximates the correlations between NSE Nifty and Industry sectors in India.

2. **Bhaswar Sarkar:** This paper calculates the cost of capital of the CNX Nifty 50 Stock Index. It explores the possibility of establishing a new benchmark, the cost of capital of stock index, in the context of capital markets. The weighted average cost of capital (WaCC) of the Nifty 50 Stock Index is computed. The WACC computed can form a new benchmark against which companies can compare their own cost of capital. Usually, companies raise a combination of debt and equity to finance their business. A new company can use this benchmark as a reference to choose the perfect combination of debt and equity to reduce its overall weighted average cost of capital. The methodology computes the cost of capital for the index by including each of the fifty companies of the Nifty index. An aggregate cost of capital is then calculated for all the companies, leading to a new benchmark called the cost of capital of the Nifty 50 stocks.
3. **Madhuri Agrawal & Deepak Garg:** This paper attempts to examine the causal relationships between Industrial Production, Interest Rate and Exchange Rate in India. The study uses Granger's Causality test and Vector Auto Regression technique on monthly IIP (Index of Industrial Production), exchange rate, and interest rate for the period April 1992 to March 2004. The major findings of the study are (a) there exists a unidirectional causality between the exchange rate and interest rate and between the exchange rate return and IIP; (b) there is no Granger's causality between the interest rate and IIP. Through Vector Auto Regression modeling, the study confirms the results obtained from Granger's Causality test. It shows that interest rate and IIP depend on the exchange rate and there is no relationship between interest rate and IIP.
4. **Kevin D. Hoover:** Duke University -Monetary policies are a species of macroeconomic policy. Monetary policies aim to influence private financial portfolios through governmental intervention in markets for bank reserves and manipulation of interest rates, thus changing private incentives, with the aim of securing better macroeconomic outcomes: lower unemployment, high rates of GDP growth, lower inflation, and so forth.
5. **Smitha & Dr.Sankaranarayanan:** The present study was an attempt to analyze systematically the techniques of monetary control measures with its relevance and changing importance and to find out their effectiveness in the Indian context especially to achieve the thriving objectives of price stability and economic growth. There is definite and remarkable economic impact of monetary policy on Indian economy in the post-reform period. The importance of monetary policy has been increasing year after year. Its role is very relevant in attaining monetary objectives, especially in managing price stability and achieving economic growth. Along that, the use and importance of monetary weapons like Bank rate, CRR, SLR, Repo rate and Reverse Rate have increased over the years. Repo and Reverse Repo rates are the most frequently used monetary techniques in recent years. The rates are varied mainly for curtailing inflation and absorb the excess liquidity and hence to maintain price stability in the economy. Thus, this short-time objective of price stability is more successful on Indian economy rather than other long-term objectives of development. Monetary policy rules can be active or passive. The passive rule is to keep the money supply constant, which is reminiscent of Milton Friedman's money growth rule. The second, called a price stabilization rule, is to change the money supply in response to changes in aggregate supply or demand to keep the price level constant. The idea of an active rule is to keep the price level and hence inflation in check. In India, this rule dominates our monetary policy. A stable growth is healthy growth.

6. **B L Pandit & Pankaj Vashisht:** Impact of changes in policy rate of interest on demand for bank credit is examined for seven emerging market economies including India for the period 2002 to 2010. Panel data techniques are used after ruling out the presence of unit roots. The results show that when other determinants, like domestic demand pressure, export demand and impact of stock market signals are controlled for, change in Policy rate of interest is an important determinant of firms' demand for bank credit. The results confirm that monetary policy is an important countercyclical tool for setting the pace of economic activity.
7. **Dr. Chacko Jose P, Ms.BinduBalagopal:** The reforms in monetary and credit policies in India over time aimed at slowing down monetary expansion and thereby controlling inflation. Since the onset of the reforms process, monetary management in terms of framework and instruments has undergone significant changes, reflecting broadly the transition of the economy from a regulated to liberalized and deregulated regime. The objective of the present study is to analyze the trends in monetary policy reforms in India during the post liberalization period. Secondary data is used to study the changes in key policy variables to analyze the trends in monetary policy reforms in India. Secondary data were collected from the RBI bulletin, RBI occasional papers, RBI Annual Reports, Report on Currency and Finance, Economic Survey, Economic and Political Weekly (EPW). The financial system in India, through a measured, gradual, cautious, and steady process, has undergone substantial transformation. It has been transformed into a reasonably sophisticated, diverse and resilient system through well-sequenced and coordinated policy measures aimed at making the Indian financial sector more competitive, efficient, and stable. The challenge for India is to unwind the expansionary policies harmoniously since inconsistencies between fiscal and monetary policies can be costly in economic terms.
8. **MEENAKSHI VEERAMANI:** Sustainability of the fiscal policy in India has evoked serious concerns in the recent past. This paper examines the long term profile of fiscal deficit and debt relative to GDP in India, with a view to analyzing debt-deficit sustainability issues for the period 1950-1951 to 2006-2007. Time series relating to fiscal and external deficits are commonly subjected to stationary and co-integration tests to assess if the deficits are sustainable. This paper has assessed the Indian fiscal trends in terms of inter-temporal budget constraint for the Centre, the State and the combined separately, by employing Gregory and Hansen tests of co-integration with structural breaks. Here the null of no co-integration against the alternative of co-integration is tested in the presence of a possible regime shift. The results show that the fiscal stance of the Central and the State Government are unsustainable, while it is sustainable for the combined finance.
9. **Ranjan Kumar Mohanty:** The basic aim of the study is to examine both the short run and long run relationship between fiscal deficit and economic growth in India by covering the time period from 1970-71 to 2011-12. Johansen Co integration test, Granger Causality test, And Vector Error correction Model(VECM) technique are adopted in order to examine the objectives of this study. The Johansen methodology confirms the existence of long run relationship between GDP and the selected variables. The findings of the paper indicate that there is negative and significant relationship between fiscal deficit and economic growth in the long run. One percent increase in Fiscal deficit is likely to significantly decrease gross domestic product by 0.216537. But the Vector Error Correction model and Granger Causality test discards the short run relationship between fiscal deficit and economic growth. The findings of study also reveal that the negative impact of post reform fiscal deficit on economic growth is more than the impact of pre-reform's fiscal deficit. This is contrary to Keynesian theory, but in conformity with Neo-classical theory, which holds

that fiscal deficits lead to a fall in the Gross Domestic Product. The study suggests the reduction of subsidies and invests this money in health, education, infrastructure sectors such as power and roads etc., so that it will enhance the productivity of both human capital and physical capital, which will go a long way in increasing the percapita income of the people.

10. **Soumya Chakraborty, Shruti Shukla** : Index of Industrial Production (IIP) is one of the lead indicators of the Indian economy. The present series of IIP is compiled using a fixed base Laspeyres formula with 2004-05 as the base year. In India, the base year revision takes a little longer time and hence the index suffers heavily from the drawback of an antiquated base year – obsolescence of some item and a shift in the weight structure. In recent past, serious doubts have been raised on the credibility of the IIP figures on the ground of the high volatility. The present study makes a modest attempt to compile annually chain-linked IIP with weights updated every year based on the details of ASI data as per the recommendations of the United Nations Statistics Division (UNSD) and compare them with the corresponding fixed base indices. The results show that although in some cases the chain base indices are less volatile than their fixed base counterparts, such behavior is not uniform across the industries. The study points out to the inherent variability in the item level production figures that are used for compilation of IIP and suggests a detail study on the IIP production data.

**RESEARCH METHODOLOGY:** - This analysis has been done on secondary data by using descriptive statistical tools. The following formulas were considered for the analysis purpose.

#### **REGRESSION:-**

Regression is the closest thing to estimating causality in data analysis, and that's because it predicts how much the numbers "fit" a projected straight line. There are also advanced regression techniques for curvilinear estimation. The most common form of regression, however, is linear regression, and the least squares method to find an equation that best fits a line representing what is called the regression of y on x.

$Y_i = \beta_0 + \beta_1 Z_i + E_i$  Where,  $Y_i$  = outcome score for the  $i^{\text{th}}$  unit,  $\beta_0$  = coefficient for the intercept,  $\beta_1$  = Coefficient for the Slope,  $Z_i = 1$  if  $i^{\text{th}}$  unit is in the treatment group, 0 if  $i^{\text{th}}$  unit is in the control group,  $E_i$  = residual for the  $i^{\text{th}}$  unit

**CORRELATION:-** The following table lists the interpretations for various correlation coefficients:

0.0-0.3 Slightly Correlated, 0.3-0.7 Moderate Correlated, 0.7-1.0 Strongly Correlated

The most frequently used correlation coefficient in data analysis is the Pearson product moment correlation. It is symbolized by the small letter r, and is fairly easy to compute from raw scores using the following formula:

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{n(\sum x^2) - (\sum x)^2} \sqrt{n(\sum y^2) - (\sum y)^2}}$$

$N$  = number of pairs of score,  $\Sigma xy$  = sum of the product of paired scores,  $\Sigma x$  = sum of x scores,  $\Sigma y$  = sum of y scores,  $\Sigma x^2$  = sum of squared x scores

$\Sigma y^2$  = sum of squared y scores.

### **T-TEST:-**

T-tests are kind of like little F-tests, and similar to Z-tests. It's appropriate for smaller samples, and relatively easy to interpret since any calculated t over 2.0 is, by rule of thumb, significant. T-tests can be used for one sample, two samples, one tail, or two-tailed. You use a two-tailed test if there's any possibility of bi-directionality in the relationship between your variables. The formula for the t-test is as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

**AUGMENTED DICKEY-FULLER TEST:-** An augmented Dickey-Fuller test is a test for a unit root in a time series sample. An augmented Dickey-Fuller test is a version of the Dickey-Fuller test for a larger and more complicated set of time series models. The augmented Dickey-Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejection of the hypothesis that there is a unit roots at some level of confidence. In one example, with three lags, a value of -3.17 constituted rejection at the p-value of .10.

**PHILLIPS-PERRON TEST FOR ONE UNIT ROOT:-**Phillips-Perron tests assess the null hypothesis of a unit root in a univariate time series  $y$ . All tests use the model:  $y_t = c + \delta t + a y_{t-1} + e(t)$ . The null hypothesis restricts  $a = 1$ . Variants of the test, appropriate for series with different growth characteristics, restrict the drift and deterministic trend coefficients,  $c$  and  $\delta$ , respectively, to be 0. The tests use modified Dickey-Fuller statistics to account for serial correlations in the innovations process  $e(t)$ .

The Average variables are not stationery. All the economic variables were average to yearly. This data is found to be non stationary. ADF (Augmented Dicky Filler) 1<sup>st</sup> difference & 2<sup>nd</sup> difference has been applied to convert the data into stationery but found to be not significant. Philliperron test 1<sup>st</sup> difference were also failed to convert the data into stationery. But 2<sup>nd</sup> difference of the phillip person has been to be stationery. The following variables were converted into stationery by Phillip person second difference are Fiscal Deficit, Nifty, GDP, and SLR

**TESTING FOR GRANGER CAUSALITY:-**causality testing is done properly when the time-series you're using are non-stationary (& possibly co integrated). A simple definition of Granger Causality, in the case of two time-series variables,  $X$  and  $Y$ : "X is said to Granger-cause  $Y$  if  $Y$  can be better predicted using the histories of both  $X$  and  $Y$  than it can by using the history of  $Y$  alone."

We can test for the absence of Granger causality by estimating the following VAR model:

$$Y_t = a_0 + a_1Y_{t-1} + \dots + a_pY_{t-p} + b_1X_{t-1} + \dots + b_pX_{t-p} + u_t \quad (1), \quad X_t = c_0 + c_1X_{t-1} + \dots + c_pX_{t-p} + d_1Y_{t-1} + \dots + d_pY_{t-p} + v_t \quad (2)$$

Then, testing H0:  $b_1 = b_2 = \dots = b_p = 0$ , against HA: 'Not H0', is a test that X does not Granger-cause Y, Similarly, testing H0:  $d_1 = d_2 = \dots = d_p = 0$ , against HA: 'Not H0', is a test that Y does not Granger-cause X. In each case, a rejection of the null implies there is Granger causality.

**LIMITATIONS:-**

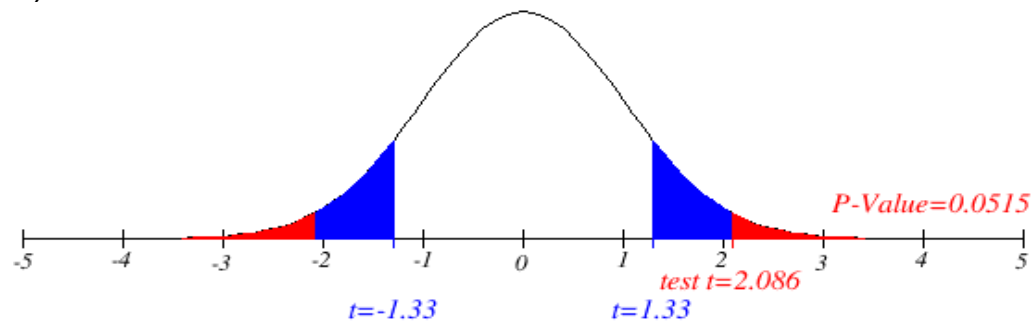
- 1) Repo rate and reverse repo rate data is not available from 1994 to 1999.
- 2) Bankers liquidity data is not available from 1994 to 2001.
- 3) Inflation calculation has been changed three times during the analysis period. But for this analysis inflation has been averaged annually, ignoring the calculation method.
- 4) The selected variables have been averaged yearly this data is not found to be stationery by ADF(augmented dickey filler).By using Philip person test with second difference the data has been moulded to stationary.

**DATA ANALYSIS:**

		SLR	REPO	REVERSEREPO	CRR	INFLATION
SLR	Pearson Correlation	1	-.673**	-.669**	.875**	0.191
	Sig. (2-tailed)		0.001	0.001	0	0.42
	N	20	20	20	20	20
REPO	Pearson Correlation	-.673**	1	.967**	-.836**	-0.23
	Sig. (2-tailed)	0.001		0	0	0.33
	N	20	20	20	20	20
REVERSEREPO	Pearson Correlation	-.669**	.967**	1	-.836**	-0.197
	Sig. (2-tailed)	0.001	0		0	0.405
	N	20	20	20	20	20
CRR	Pearson Correlation	.875**	-.836**	-.836**	1	0.309
	Sig. (2-tailed)	0	0	0		0.185
	N	20	20	20	20	20
INFLATION	Pearson Correlation	0.191	-0.23	-0.197	0.309	1
	Sig. (2-tailed)	0.42	0.33	0.405	0.185	
	N	20	20	20	20	20

**INTERPRETATION:-**The above table depicts the relationship between key variables of monetary policy. Repo rate and reverse repo rate are found to be highly strongly correlated. Statutory liquidity ratio is slightly correlated with inflation. But SLR is positively strong correlated with CRR during the analysis period. Repo rate and reverse repo rate are found to be slightly negative correlated with inflation. Hence there is strong correlation between the reserve ratios and interest rates during the analysis period.

2)



**INTERPRETATION:-**T-Test has been applied to find the budget allocation impact on SLR. The hypothesis analysis accepted the null hypothesis as the calculated value has fallen under significance region which is below the table value. Hence fluctuations of SLR are majorly depend on central government budget allocations.

3) Bivariate correlation has been applied with repo and reverse repo rate to IIP and it has been observed that the relationship between these variables are slightly positive correlated with IIP. Cost of capital for the corporates depends on interest rates. Based on this future production of industrial index has been done with the help of the regression equation.

$$Y=A+BX$$

A=value that is to be predicted

B=slope/risk involved

X= intercept

$$Y=A+BX=162.124$$

IIP is expected to raise to 162.124 from 162.10

Regression equation has predicted the IIP upside in the near future because Y value is slightly above the A value.

### GRANGER CAUSALITY TEST

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DDFISCALDEFICIT does not Granger Cause DDSLR	17	0.32462	0.7290
DDSLR does not Granger Cause DDFISCALDEFICIT		0.23476	0.7943

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DDNIFTY does not Granger Cause DDSLR	17	0.01148	0.9886
DDSLR does not Granger Cause DDNIFTY		0.19234	0.8275
DDGDP does not Granger Cause DDSLR	17	0.74318	0.4963
DDSLR does not Granger Cause DDGDP		1.04714	0.3809
DDNIFTY does not Granger Cause DDFISCALDEFICIT	17	7.25103	0.0086
DDFISCALDEFICIT does not Granger Cause DDNIFTY		1.22914	0.3269
DDGDP does not Granger Cause DDFISCALDEFICIT	17	0.52455	0.6048
DDFISCALDEFICIT does not Granger Cause DDGDP		0.38974	0.6855
DDGDP does not Granger Cause DDNIFTY	17	0.06407	0.9383
DDNIFTY does not Granger Cause DDGDP		1.00880	0.3936

**INTRPRETATION:** - Granger Causality Test has been applied between the variables to find the effect on each other and the probability value of fiscal deficit and SLR are rejected because it is more than 0.5. Hence it is not influencing. FD doesn't influence SLR and vice versa. Nifty doesn't influence SLR and vice versa because the probability value is more than 0.5 and it is rejected. GDP influence SLR and vice versa because the probability value is less than 0.5. FD influence Nifty and Nifty influence FD because the probability value is less than 0.5 and it is accepted. GDP doesn't influence FD and vice versa because the probability value is more than 0.5. GDP doesn't influence nifty as the probability value is more than 0.5 but nifty influence GDP as the probability value is more than 0.5.

#### **FINDINGS:**

1. There is no relationship between monetary policy key rates with inflation
2. Budget Allocation has impact on SLR Fluctuations.
3. There is relation between interest rates and IIP and in future IIP is going to rise up
4. Fiscal deficit doesn't influence SLR & SLR doesn't influence fiscal deficit.
5. Nifty doesn't influence SLR & SLR doesn't influence nifty.
6. GDP influence SLR but GDP doesn't influence fiscal deficit & nifty.
7. Nifty influence GDP.

**CONCLUSION:-** I conclude the analysis of SLR impact on fiscal deficit of India. This paper has focused on 20 years monetary policy data along with the economy reflectors, variables like fiscal deficit, budget allocation & IIP. Weighted least square analysis proven that currency fluctuation influenced the

inflation to more upside but it didn't influence the interest rates. T-test hypothesis had proven that budget allocation influence the banker's liquidity in the country. Repo rate had played a vital role in corporate lending fund. Regression equation predicted that IIP is expected to move up slightly. Johnson co integration test has been applied on select economic variables along with SLR and the values test result log likely hood by rank model values were higher than the other trend values. Thus the variables were found to be co integrated. Granger causality test has been applied on co integrated variables the probability value found to be significance of SLR with GDP, fiscal deficit but SLR doesn't granger cause nifty. Hence SLR is playing vital role in containing fiscal deficit & contributing for the growth of GDP. There is a further scope to do research on SLR and its influence on general economy. Hence there is further scope to do research in this area to find exact method through which is fiscal deficit will get narrowed without compromising on growth.

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